Microwave-Refractive Spheroids with Wave Guidance for Phase-Metric Gating of Electromagnetism via Selective Solitonization and Piezo-Electric Actuation

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Introduction

Although a system such as the 19 October 2025 system for Precision Transflection and Timing for Phase Synchronization may prove applicable to high-bandwidth wireless data transfer applications sc. cellular telecommunications, in the area of signals intercept, a solution is called for which allows for a wide range of frequencies to be intercepted which incorporates a noise-filtering mechanism which does not diminish sensitivity.

The following proposal draws from a couple of previous proposals, one of which had photovoltaic conversion (8 January 2023) as its objective and another which had propulsion as its objective (5 September 2022.)

Abstract

When visible light is guided to a glass nanosphere and its phase height matches the diameter of the sphere, the light may be solitonized. This solitonized light can be used in order to generate kinetic force. If it strikes a material such as copper, the wave acts as a magnetic monopole and pushes against the plate, efficiently converting energy and allowing for propulsion in any direction (ibid. 5 September 2022.) By the same token, these waves can be used to generate electricity through a piezo-electric process as described in 8 January 2023. (Soliton waves, incidentally, have many other exciting applications including the suppression and enhancement of combustive chemical reactions.)

Whereas the 8 January 2023 publication was focused upon energy-harvesting, this publication is focused upon the possibility of utilizing spheres with different properties in order to bring about the refraction of EM in the microwave domain much as a glass sphere would refract visible light. If the solitonization of microwave energy can be brought about in a comparable manner as with visible light, the spheres' properties of diameter as well as magnetization could be used in order to, when coupled with magnetic wave guidance in order to ensure alignment, ensure the conversion of only EM of the specifically desired frequency into measurable current through a piezo-electric actuation effect.

As with photo-magnetic propulsion systems, if the wave of EM can be steered so as to strike a spheroid capable of refracting the microwave energy in a precisely calibrated fashion (whereas the peak and trough of the phase of the wave must match up with the edges of the sphere,) if the diameter of the spheroid matches the phase height of the EM, a soliton wave would be created. If the phase height is off by as much as 25nm for a wave which would ordinarily have a 1mm phase height, a soliton wave would not be created and no measurable current would be generated. This mechanism

would require that each spheroid would have a corresponding channel before it which would perform the wave-guidance/alignment function. That function is absolutely critical as perfect alignments are required for soliton conversion.

Interestingly, this system works in the inverse way as a TFBAR system, which brings about piezo-electric resonances in order to prevent undesired frequencies from arriving at a conventional antenna. In this case, we're capturing only the desired frequency and bringing about selective solitonization in order to ensure that only EM of a specific frequency is ultimately converted into an electrical impulse. This method does not, for example, require acoustic resonance or a filter which sits inside of an atmospheric vacuum.

Due to the narrow tolerances involved, a system predicated upon sphere diameter alone would require too large of a number spheres in order for the system to be practical for capturing a wide range of frequencies. However, as the metallic spheroids would need to be magnetically boosted in any event in order to bestow upon them the property of refracting microwaves sufficiently to bring about this effect, the needed artificial magnetic field may be varied so as to adjust the target frequency for this specialized antenna.

Each spheroid would be surrounded by a series of electromagnets which have their "norths" facing toward the spheroids. This would amplify the innate magnetism of the material and ensure that EM striking the sphere would tend to be solitonized should it fall within the compatible range of phase heights (which, remember, always correspond proportionally to frequency.) Stronger fields would allow for spheres with diameters larger than the target phase height to be used for solitonization, although there are limits. This system would certainly be predicated upon the use of arrays of spheres to cover the broad range of microwave frequencies.

On the back side of the spheres, the soliton waves; resembling flat walls of photons; would strike a piezo-electric material and generate current in reaction to any matching EM waves intercepted with both a high degree of sensitivity and with a minimal of signal noise.

Conclusion

The viability of this approach illustrates the superiority of phase-based signal discrimination versus frequency-based, which was, in turn, superior to amplitude-based. Although we're still trying to infer the frequency of a given wave, we're using the phase height, in this case, of a single wave (rather than its wavelength) to make that inference (ordinarily, assessing frequency would require a large conventional antenna which is of a scale proportional to wavelength or would require multiple waves to be measured and compared using an unconventional antenna such as a magnetometer.) As phase-modulated wireless signals become more common, the signals intercept mission will require methods of intercept which allow for a high degree of sensitivity and frequency-specificity whilst reducing noise to the greatest extent possible. For signals intercept applications, this approach is ideal as it allows for the "antenna" to double as a filter rather than having these as separate mechanisms as in the case of traditional receivers.